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3. *PARMELIA MOLLIUSCULA*, ACH.

This species* was described by Acharius from specimens collected by Thunberg at the Cape of Good Hope. Nylander has reported it from Peru. According to Tuckerman the specimens of *Borreria camtschadalis* (in Herb. Sprengel.) from Soongaria, *Parmelia congruens* (in Herb. Floerk.) collected by Tilesius in Kamtschatka, and *Parmelia vagans*, Nyl. (in Herb. Krempelhüber.) from the Steppes of the Volga in Russia, belong to this species. It is found plentifully on sterile calcareous or sandy soils from the Badlands of the Dakotas and Nebraska to the Rocky Mountains. It has then a very wide distribution, having been found in Europe, Asia, Africa, and North and South America. In spite of the fact that it has been collected in so many localities, it has heretofore been reported as "always sterile."

The original description of Acharius in his *Lichographia Universalis*, p. 492, 1810, is as follows:—

Thallo substellato molliusculo sordide albido-virescente subpulverulento, subtus concolori, laciniis imbricatis convexiusculis linearimultifidis ad apices subtus subcanaliculatis.

Habitat ad terram juxta Promontor. bonae sp. Africae.

Obs. Thallus vix stellatus nudus aut pulvere concolori adpersus. Lacinae crassiusculae molliores, substantia corticali facile tamen fragibili, lineares pinnatifidae digitato-palmatae, ad apices subtus planae vel canaliculatae ibidemque fibrillis quibusdam obsitae. Apothecia non vidi.

In *Observations on N. A. Lichens*, Proc. Amer. Acad., Vol. IV, p. 383, 1860, Tuckerman described a lichen, collected by Hayden and others on the western plains, under the name of *Parmelia chlorochroa*. He gave it the following description:—

* Acharius, *Lich. Universalis*, p. 492, 1810; Nylander, *Syn. I*, p. 393; Tuckerman, *Syn. N. Amer. Lich. I*, p. 64.—*Parmelia chlorochroa*, Tuckerman, *Obs. Lich.*, Proc. Amer. Acad., Vol. IV, p. 383.

Thallo substellato-multifido decumbente coriaceo laevi nudo flavo-virescente (stramineo) laciniis discretis laxè intricatis repetito-dichotomis marginibus recurvis (conniventibus) subtus fuscis (nigrescentibus) fibrillis nigris subpannosis; apotheciis.

In his *Genera Lichenum* he mentions this same lichen, but concludes that it belongs to *Parmelia molliuscula*, Ach. In his synopsis of *North American Lichens*, I, p. 64, he still holds to this last determination and gives the following description: —

Parmelia molliuscula, Ach.; Everniaeform, the narrowed lobes substellate, or loosely intricate, dichotomously more or less regularly divided, convex; beneath channeled, or the margins connivent, and densely, or now obsoletely fibrillose; apothecia unknown.

Recently while looking over the lichens of the Engelmann Herbarium at the Missouri Botanical Garden, a couple of fragments of this species were found bearing several apothecia. The specimens are from Upper Pole Creek in the Black Hills region, and were collected by Dr. H. Engelmann, August, 1856.

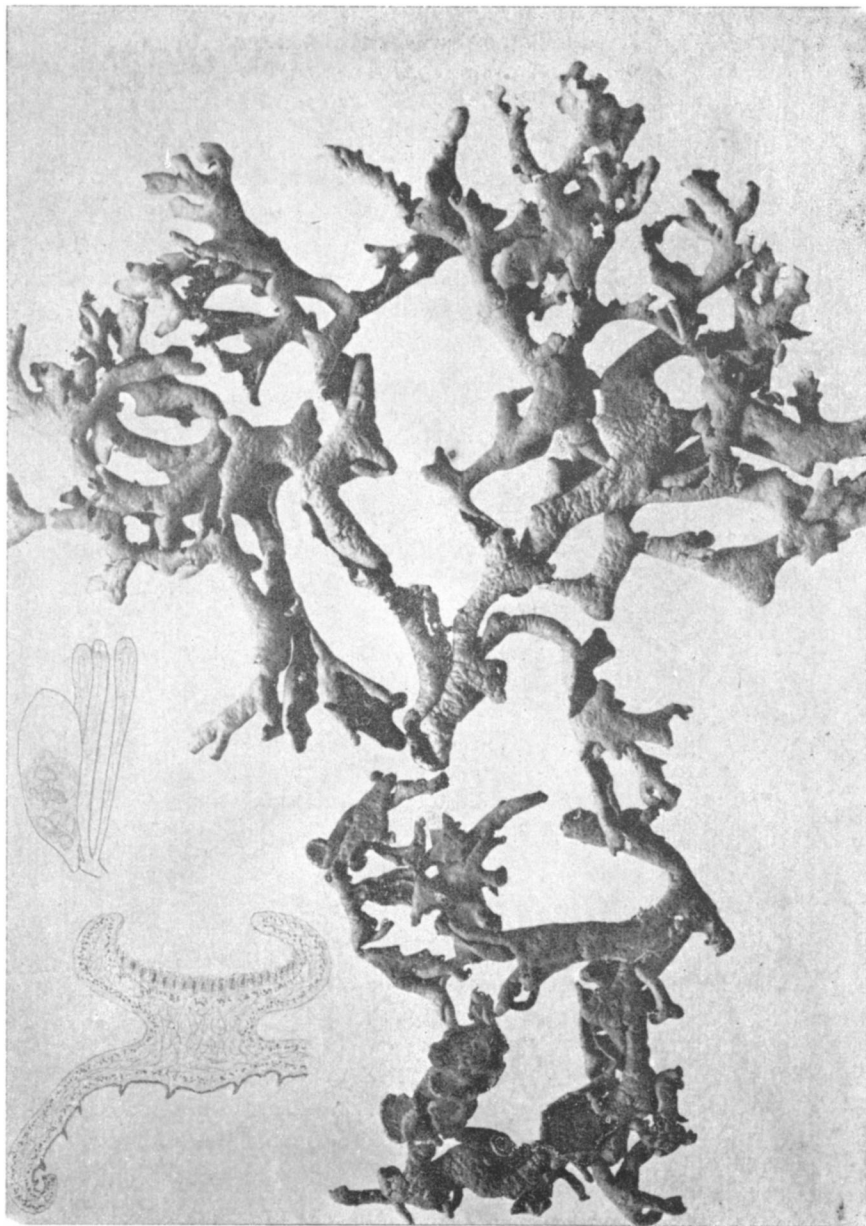
A study of these specimens enables us to add to the foregoing descriptions: — Apothecia middling size; disk dark chestnut brown, becoming flattish; margin often at first entire, but soon becoming suberenate.

A careful study of numerous sections of the best developed apothecia failed to show any mature spores *in situ*. Nearly all the asci contained shrunk masses of protoplasm and many of them showed the beginning of spore differentiation.

A few loose spores were found, however, that probably belong to this species. They were simple, colorless, ellipsoid, and measured 10 μ . long by 5 μ . in width.

Plate 57 shows a sterile thallus above, and below, the fertile specimens referred to, x 2; a cross section through a medium sized apothecium near the revolute margin, x 10; and an ascus showing incipient spore formation, with a cluster of three paraphyses, x 650.

T. A. WILLIAMS.



PARMELIA MOLLIUSCULA.